TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
UNIVERSITY FARM, ST. PAUL 8, MINNESOTA

No. 255

A Quick Method of Estimating Cull in Northern Hardwood Stands[1]

In estimating merchantable timber volumes cruisers need a systematic method of determining cull. For northern hardwood sawtimber, a fair approximation of cull percent can be obtained quickly by the following method:

1. For each 20- to 40-acre tract, examine a minimum of 40 or 50 trees as they come in the stand. Record the cull class for each tree on the basis of visible defects.
   Class 1 - Trees with no major visible defect[2]; minor defect[3] permitted.
   Class 2 - Trees with one major visible defect.
   Class 3 - Trees with two major visible defects.
   Class 4 - Trees with three or more major visible defects.
   [2] <u>Major Visible Defects</u>: Butt rot, conk, canker, large or spiral seam, large crack, large scar, large hole, large rotten burl, large broken or dead limb or fork, broken or dead top, serious crook or sweep, abnormally short merchantable length.
   [3] <u>Minor Defects</u>: Ingrown bark, sterile conk, small seam, small crack, small scar, small hole, small rotten burl, small broken or dead limb, slight crook or sweep.
2. Determine gross volume of each sample tree. Use board foot volume table No. 1 in Technical Note No. 203 for Lake States conditions.
3. Compute the cull volume of each tree by applying the following percentage deductions to gross volumes:
   Class 1, 5; class 2, 10; class 3, 35; class 4, 60 (if 100 percent cull trees excluded from sample) or 70 (if 100 percent cull trees included in sample).
4. Determine gross volume and cull volume for the entire sample.
5. Divide the cull volume by the gross volume to determine the cull percent applicable to the stand.

To increase the accuracy of the cull cruise do these things:

a. Consider a single defect culling the first 16-foot log as two defects.
b. Consider a single defect extending into two 16-foot logs as two defects; if into three logs, count as three defects.
c. Any defect in the top log should be considered minor for trees 15 inches, d.b.h. and larger, unless it completely culls the section.
d. Where two or more defects will cut out together, consider as one defect.
e. Minor defects so numerous or extensive as to equal a major defect in loss of scale should be considered as one major defect.
f. Always throw borderline cases into the higher class to compensate for hidden defect.

The cull percent obtained by this method is most accurate for stands averaging 2-1/2 logs. <u>Increase</u> the percentage by one-third for 1-log stands, by 10 percent for 2-log stands; <u>decrease</u> it by 10 percent for 3-log stands, and by one-fourth for 4-log stands.

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[1] S.R.Gevorkiantz and W.A.Salminen assisted in the development of this method.

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